

88-2040A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Sandor Nagy et al.

Ser. No. 10/611,827

Filed: July 1, 2003

For: OLEFIN POLYMERIZATION PROCESS

Group Art Unit: 1713

Examiner: Rip A. Lee

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.131

We, **SANDOR NAGY** and **KAREN NEAL-HAWKINS**, declare and say:

1. We are co-inventors of claims 1-18 of the above-identified patent application (Appl. Ser. No. 10/611,827, filed July 1, 2003), hereinafter "the '827 application";

2. We have reviewed the application as filed in the United States Patent & Trademark Office (USPTO). In addition, we have reviewed the reference cited by the Examiner, U.S. Pat. Appl. Publ. No. 2003/0004052 (published January 2, 2003), along with its corresponding U.S. Pat. No. 6,759,361 (issued July 6, 2004).

3. Prior to January 2, 2003, we conceived and actually reduced to practice in the United States the invention claimed in claims 1-18 of the '827 application. As evidence of the completion of the invention, we attach Exhibits A1 and A2, separately executed copies of Invention Disclosure No. C02-248, which we submitted to Equistar Chemicals, LP. Each of the dates removed from the documents is prior to January 2, 2003. The disclosure demonstrates olefin polymerizations using an indenolindolyl organometallic complex, an activator, and an aluminum phosphate support. The demonstrated process has improved catalyst

activity and the polyolefin has lower density indicating improved comonomer incorporation.

4. We further declare that all statements made in this declaration of our own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that willful false statements may jeopardize the validity of the application or any patents that would issue from it.

Further, declarants saith not.

Sandor Nagy  
SANDOR NAGY, Ph.D.

Aug 09, 2004  
DATE

Karen Neal-Hawkins  
KAREN NEAL-HAWKINS

8/10/04  
DATE

**EQUISTAR**

INVENTION and IDEA DISCLOSURE

EXHIBIT A1

CONFIDENTIAL

To be Completed by Patent Department

Disclosure No.: C-02-248

Assigned to: Catalysts/JON

Date Received:

DATE:

Inventions are new compositions, processes, and improvements thereof that relate to Equistar's current products or derivatives. They are believed to be patentable by the submitter. Ideas are anything that can add future value to Equistar. Here we want your ideas for new products, markets, business methods, radical or step-out opportunities, etc.

**TITLE: Improved performance of STAR3B catalyst on alumophosphate supports**

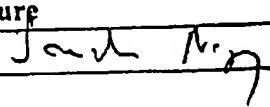
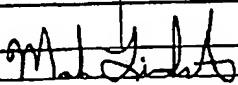
The purpose of this ID is to suggest aluminophosphates as promising supports for catalysts based on bridged Indeno-Indol complexes. The attached table indicates that catalysts prepared on this support (calcined at 250 or 600C) significantly improves the activity and efficiency of comonomer incorporation combined with a narrow MW distribution of the resulting resin (based on MFR and Er):

Table:

Relative performance of STAR3.B catalyst on different supports (slurry deposition)

Catalyst: 0.01g (0.019 mmoles)/g support; Al/Zr=400  
Conditions: 70C, 350 psi C2, 100ml C6, 30 min; TiBAI

Calc Temp: Support	Reactivity (g/g support)	Reactivity (g/g metal/hr)	ML	MIR	H2 Abs (cc)	Mn-C	ER	density (g/ml)
250°C ES757	469.0	662.9	1.63	96.93	250		4.33	0.9244
250°C ES757	491.3	694.5	1.3	52.92	200			
600°C ES757	488.3	662.7	1.81	46.46	250	108.3	2.95	0.9214
600°C 948	569.0	707.8	1.23	53.90	250	107.1	3.29	0.9188
200° Mont K-10	334.3	283.5	4.05	40.72	250		2.07	0.9263
250°C Al oxide	404.4	320.2	4.37	23.55	250		1.4	0.9209
600°C Al oxide	383.1	303.3	2.63	20.15	250		0.88	0.9161
250°C Al phosphate	1072.2	1030.7	4.55	27.54	250	107.1	1.16	0.9146
250°C Al phosphate	1240.2	1192.2	0.57	37.19	150			
600°C Al phosphate	1119.6	1076.3	4.7	30.32	250	106.3	1.29	0.9128
600°C Al phosphate	1166.0	1120.8	1.09	28.53	180			

Signature	Printed Name	Location/Phone	Date
	S. Nagy	PRC	
	Karen Neal-Hawkins	CTC	
Read and understood by: 	Date:		

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**EQUISTAR**

EXHIBIT A2

**CONFIDENTIAL****INVENTION and IDEA DISCLOSURE**

To be Completed by Patent Department  
 Disclosure No.: C-02-248  
 Assigned to: Catalyst/JON  
 Date Received:

**DATE:**

Inventions are new compositions, processes, and improvements thereof that relate to Equistar's current products or derivatives. They are believed to be patentable by the submitter.  
 Ideas are anything that can add future value to Equistar. Here we want your ideas for new products, markets, business methods, radical or step-out opportunities, etc.

**TITLE: Improved performance of STAR3B catalyst on alumophosphate supports**

The purpose of this ID is to suggest aluminophosphates as promising supports for catalysts based on bridged Indeno-Indol complexes. The attached table indicates that catalysts prepared on this support (calcined at 250 or 600C) significantly improves the activity and efficiency of comonomer incorporation combined with a narrow MW distribution of the resulting resin (based on MFR and Er):

**Table**  
 Relative performance of STAR3B catalyst on different supports  
 (elurry deposition)

Catalyst: 0.01g (0.019 mmole)/g support; Al/Z=400  
 Conditions: 70C, 350 psi C2, 100ml C6, 30 min; TIBA

Calc. Temp./Support	Reactivity (g/hr support)	Reactivity (g/hr metal/hr)	MI	MIR	MW Anal /sec	Mp, °C	Er	density g/ml
250°C ES757	469.0	662.9	1.63	96.93	250		4.33	0.9244
250°C ES757	491.3	694.5	1.3	52.92	200			
600°C ES757	488.3	662.7	1.81	46.46	250	108.3	2.95	0.9214
600°C 94B	569.0	707.8	1.23	53.90	250	107.1	3.29	0.9188
200° Mont K-10	334.3	283.5	4.05	40.72	250		2.07	0.9263
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Signature	Printed Name	Location/Phone	Date
	S.Nagy	PRC	
<i>Karen Neal-Hawkins</i>	Karen Neal-Hawkins	CTC	
Read and understood by: <i>Jose KO'Boahe</i>			Date: _____

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